

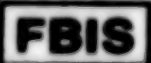
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19 May 1981

# Worldwide Report

ENVIRONMENTAL QUALITY

No. 306



FOREIGN BROADCAST INFORMATION SERVICE

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19 May 1981

# WORLDWIDE REPORT

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WA GOVERNMENT TO BOLSTER ENVIRONMENTAL STUDIES

Perth THE WEST AUSTRALIAN in English 31 Mar 81 p 8

[Text] The WA Government plans to strengthen scientific research into land use, water supplies and salinity problems.

It has decided to reorganise various committees with the aim of gaining more knowledge of environmental factors.

The senior research scientist-analyst of the Department of Conservation and Environment, Dr M. Mulcahy, has been appointed to a research co-ordinating committee set up in 1979 to determine priorities in land-use planning.

He has also been appointed chairman of an enlarged research steering committee.

He will travel extensively in the South-West to establish links with agriculture advisers, shire councils and farming groups.

Dr Mulcahy is already chairman of a clearing-control appeal committee.

Direct Link

The Government thinks that his new posts will provide a useful direct link between the research committees.

The Premier, Sir Charles Court, said yesterday that the Kelsall committee on woodchips and the Hunt committee on bauxite-mining would be brought under the direction of the coordinating committee which did research into land use in the Darling Range and beyond.

He said that Mr H. Hunt's retirement and the transfer of Mr K. Kelsall from the Public Works Department to the Metropolitan Water Board made it timely to link the research effort through the coordinating committee.

Mr Kelsall would be the MWB's representative on the coordinating committee.

Mr John Abbott, the assistant director of engineering, would be the PWD's representative.

#### Valuable Work

Sir Charles said that the research coordinating committee had done much valuable work in coordinating the research priorities and programmes of the Forests Department, the Department of Agriculture, the PWD and the MWB.

It was also working closely with the dieback research foundation and received strong support from the universities and other research organisations.

The Government was speeding and strengthening a coordinated approach to research activity.

It wanted to combine research knowledge with the experience of farmers to develop practical programmes that could be applied to protect soil and reclaim land that had been damaged by salinity and erosion.

CSO: 5000

TOXIC WASTE DUMPING IN BRISBANE AREA CAUSE FOR CONCERN

Brisbane THE COURIER-MAIL in English 15 Apr 81 pp 1,2

[Excerpts] The Lord Mayor, Alderman Sleeman, yesterday admitted serious problems existed at Brisbane City Council's official liquid waste treatment plant.

He said he became aware of potentially serious health risks "a short time ago" and was so alarmed he immediately went to see the State Health Minister, Mr Austin.

The plant is at Willawong between the southern Brisbane suburbs of Acacia Ridge and Inala.

Alderman Sleeman said: "I am concerned. We have a problem and it is up to the State Government and the City Council to get together to do something about it."

Alderman Sleeman's statement followed a claim by chemist Mr Ralph Carlisle that the disposal of dangerous chemicals and industrial waste in Brisbane lacked proper management.

Mr Carlisle said he had heard that four of the five employees at the plant had resigned for medical reasons, particularly kidney and liver damage.

An employee at the plant later confirmed this. He said the first of the four resigned a week ago, the last on Monday.

Mr Carlisle said the movement of the waste through the soil was particularly alarming because of the closeness of Blunder Creek. Seepage had been observed breaking through the banks of a gully leading to the creek.

While he was at Willawong, some 13 million litres of liquid waste were disposed of by burial each year. The waste consisted mainly of acids, alkalis, pesticide washes, oils, solvents, and paint sludges, all of which were defined as hazardous.

He said one of the main problems at Willawong was that the transporters of liquid waste to the treatment plant were not obliged to declare what sort of waste they were carrying or where it came from.



Without this information, it was almost impossible to tell how hazardous the waste was. Visual observation and chemical tests gave some idea, but many hazards could go undetected.

It also meant that there was no detailed record of what was buried at Willawong.

Transporters of waste refused to reveal the sources of their waste because they did not want their customer lists to be made known.

Brisbane environmental chemist, Mr Greg Miller, said last night that aerial infra-red photographs taken two years ago revealed toxic waste material leaking from trenches at Willawong.

Mr Miller, of Griffith University School of Australian Environmental Studies, said he had confronted an official with this information but had been "fobbed off."

"As far as he was concerned, the area was all right because the Water Quality Council had told him so," he said. "He was shown the pictures but he just wasn't interested."

Mr Miller said highly toxic "chemical cocktails" such as 2,4D and 2,4,5 T were being dumped at Willawong. "Trying to determine exactly what chemicals are present in waste material there now is an analyst's nightmare," he said.

"But what really concerns me is how the people living in the area are being affected.

"Admittedly, not many people do live close to the plant. But with a lot of pesticides being dumped there, you can expect a high proportion of them to go into the atmosphere.

"And then, it depends on which way the wind blows."

Mr Miller said the area would be environmentally "written off" for decades.

Mr Miller said it was highly likely that the waste material could seep into the ground water system.

"Tests made on new trenches in the area revealed sand aquifers suggesting that waste is being transported into underground water supplies.

CSO: 5000

GOVERNMENT TOLD ASBESTOS-CAUSED DISEASE WILL INCREASE

Perth THE WEST AUSTRALIAN in English 31 Mar 81 p 26

[Text] Canberra: A significant increase in asbestos-induced diseases was occurring in Australia, a parliamentary committee was told yesterday.

Judging by overseas experience, the increase could be expected to take an inexorable upward trend, not only for asbestosis (scarring of the lungs) but for mesothelioma (cancer).

The information was contained in a submission presented by the Asbestos Diseases Society to the House of Representatives standing committee on environment and conservation. It is inquiring into hazardous chemicals.

The society also said that asbestos processors had been successful in broadening and deepening their penetration in the areas of small industry users and suppliers to tradesmen and home handymen.

The submission said: "Though exposure levels may be relatively low for those areas at the bottom of the list (tradesmen, home handymen), the exposed population is large, so the absolute number of individuals affected with asbestos diseases correspondingly increases."

The society said that the point to remember was that there was no safe level of exposure to asbestos dust.

Industry, governments and their bureaucracies had failed to adequately comprehend the size of health and safety problems entailed in the manufacture and handling of hazardous chemicals, the society said.

The hazards of these chemicals were often long-term, the effects becoming apparent only many years after the causes.

This was particularly true of cancers that often did not appear until 20 years or more after the chemical had done its damage.

CSO: 5000

COURT RULING ON SAND MINING COULD HAVE BROAD RAMIFICATIONS

Sydney THE SYDNEY MORNING HERALD in English 4 Apr 81 p 2

[Article by Joseph Glascott: "Hallmark Ruling To Stop Sand Mining"]

[Text] The chairman of the Land and Environment Court, Mr Justice McClelland, granted yesterday an order restraining sand mining on Christmas Bells Plain, Port Macquarie, in a judgment which could have far-reaching consequences on all such mining in NSW.

Mr Justice McClelland's judgment gave the green light to objectors to sand mining and other developments possibly damaging to the environment to appeal to the court.

His statement is seen as a hallmark decision indicating the wide powers of a new planning and environment court.

Mr Justice McClelland said the new NSW Planning and Assessment Act of 1979 had introduced the concept of designated development.

This was a recognition of the rights of individuals to have a say in decisions which they believe might have a damaging effect on the environment.

He said the Act gave the Government power to declare a development a designated development.

Mr Justice McClelland said the Act went even further by conferring on any person the right to bring proceedings to the Land and Environment Court to remedy a breach of the Act.

"This is the first case involving designated development to come before the court and it is therefore of special importance," he said.

Hastings Shire Council, based on Port Macquarie, has sought an injunction from the court restraining Mineral Deposits Ltd from sand mining on Christmas Bells Plain until the company had obtained consent from the council.

The company argued that as the result of earlier approvals for mining in the area it was not required to seek council approval.

In 1967 and 1968 the company carried out sand mining on one of its leases. After encountering technical difficulties mining stopped and the lease was restored and reinstated with foliage.

In 1977 the company began work on a second lease. It claimed existing use right to resume mining.

Permission was granted to mine the third lease in 1977 but no work was done before permission expired in 1980.

Mr Justice McClelland said he was satisfied there was no existing use in regard to work done during 1967 and 1968, because the lease had been "effectively abandoned."

Work done in 1977 on the second lease was not substantial, he said.

Conservationists opposed the sand mining, saying it would destroy valuable natural and historical areas of the plains between Port Macquarie and Lake Cathie.

The immediate effect of the court's decision is that Mineral Deposits Ltd is required to obtain the consent of the Hastings Shire Council to mine in the area.

CSO: 5000

NSW USING NEW ACT TO CONTROL COASTAL DEVELOPMENT PROBLEMS

Sydney: THE SYDNEY MORNING HERALD in English 3 Apr 81 p 7

[Article by Jack Ferguson: "Govt on Offensive in Battle To Save Our Beaches"]

[Excerpts] In Australia, as elsewhere throughout the world, populations are concentrated near the coast. In the United States of America, more than 50 per cent of the population lives on or near the coast. In Australia the comparable figure is much higher at around 75 per cent, while in NSW it is closer to 80 per cent.

Nature is constantly launching attacks upon the beaches. It is not so very long ago that heavy seas at Wamberal caused houses to fall into the ocean, while at Collaroy and Narrabeen highrise dwellings are under grave threat because they were built too close to the shoreline.

There are no doubts whatever that New South Wales is faced with very real and urgent problems in the development of the coastal zone. Homes and industries within the zone are exposed to substantial risk from the forces of nature.

It is not generally recognised that the coastal zone extends for quite a distance out to sea, and for an appreciable distance inland from the shore. It is a much wider zone than the actual boundary between land and water. The seaward and the landward parts of this zone act and react upon each other. This happens not only directly, but also in subtle and indirect ways.

In recent years, the coastal engineer has emerged to assume a role of increasing importance within the discipline of civil engineering. Although specialists such as oceanographers and meteorologists study various aspects of coastal processes, it is the coastal engineer who must advise on specific problems and proposals where the coastal processes are involved. His concern is with the impact of man's activities on this particular part of the environment, and with the attack of the natural elements on man's use of the environment.

The Government believes that it has a responsibility in the area of coastal zone management. It sees its role as the achievement of an acceptable balance of use, conservation and preservation of the coastal zone.

Two years ago, the Government took the important forward step of passing the Coastal Protection Act. The Act does not look so much at disasters of the

past, but is designed to ensure that similar disasters are avoided in the future. This can only be done if future developments within the coastal zone are designed and located in such a way as to minimise the element of risk. The only way to successfully achieve this is to make the authorities controlling such developments fully aware of the results of their decisions.

Every disaster that has taken place along the New South Wales coastline during the past decade or so can be traced in some way to an approval given by a public authority. No doubt the motives behind the approvals were well intentioned, but, because they were unwise, the natural event of heavy seas has turned them into disasters.

Unless expert coastal advice is given, wrong decisions will continue to be made.

The Act has two main objectives. The first is to set up a Coastal Council to advise the Minister for Planning and Environment on a wide range of matters affecting the coastal zone.

The second objective gives the Minister for Public Works certain powers and duties within a defined coastal zone.

These powers cover, first, the authorisation of works necessary for the protection, preservation, maintenance, restoration or improvement of the coastal zone. Secondly, they involve the oversight of any development, use or occupation of the coastal zone that may adversely affect, or be adversely affected by the coastal river systems. In brief, the Minister for Public Works is given statutory authority in the area of coastal engineering.

Decision making still remains within the province of local government, but the Act ensures that the decision makers obtain and take note of coastal engineering advice whenever it is needed.

The coastal processes only become a problem when they threaten development.

The Coastal Protection Act is aimed at sound future development, but there is still a substantial erosion problem. Indeed, the past 10 years have seen a dramatic increase in coastal erosion problems over the entire length of the New South Wales coastline.

At present, public and private assets worth up to \$300 million are at risk, while in some areas the local economy is threatened.

A study by the Public Works Department at Byron Bay revealed that about \$14 million worth of public and private assets could be lost to the ocean during the next 50 years as a result of the forces of erosion. The study was the result of two years' intensive work by a team of coastal engineering experts who succeeded in identifying the causes of the erosion and outlined a range of options for combating the problem.

Last month, in another initiative, the State Government announced its approval of a \$10 million program of improvement and protection to the State's beaches over the next five years.

The new program is an extension of an initial five-year scheme undertaken by the Public Works Department in cooperation with local councils.

In the first five years, \$5 million was provided to conserve and develop 30 of the State's most popular beaches.

Apart from improving the amenity of the beaches, the scheme has yielded an added bonus in increasing knowledge on the beach environment and its impact upon urban development.

CSO: 3000



SEWAGE DUMPING IN SEA OFF PERTH NEEDS CONTROL CRITERIA

Perth THE WEST AUSTRALIAN in English 9 Apr 81 p 16

[Text] More than 32 million kilolitres of sewage is pumped into the sea off Perth beaches each year, the Legislative Assembly has been told.

The Acting Minister for Water Resources, Mr O'Connor, said that the Environmental Protection Society and Government departments were examining criteria for the level of faecal coliform bacteria around the outlet at Swanbourne Beach.

No criteria existed at present.

For many years, the discharge from the Swanbourne outlet had been chlorinated during the summer months to reduce bacteria.

Water in the Swanbourne-City Beach area was tested twice weekly. Water at other beaches was tested weekly.

Mr O'Connor told Mr M. J. Bryce (Lab., Ascot) that results at all sites were well within acceptable levels.

Figures supplied in answer to Mr Bryce's question showed that the total daily effluent from outlets at Swanbourne and Point Peron was 88,449kl.

Mr O'Connor, representing the Minister for Conservation and the Environment, Mr Masters, said that more than 520kl of waste was discharged each year into the Swan River north of the causeway.

The SEC also discharged more than 520kl a year.

Westrail discharged 59,600kl a year at Poison Gully.

CSO: 5000



**STUDY SETS POLLUTION GUIDELINES FOR ALUMINUM SMELTERS**

Perth THE WEST AUSTRALIAN in English 17 Mar 81 p 49

[Article by Alex Harris]

[Excerpts] A NSW study into the effects of alumina smelting lays down guidelines for farmers and conservationists facing the same problems in WA.

It recommends the most stringent standards and independent monitoring of fluoride emissions to safeguard human health, crops and farm animals.

It says that if these were adhered to a smelter using modern pollution control, equipment could operate without damage to the environment.

The investigation was carried out by a 10-member working party from the Hunter Development Board after widespread anxiety about the social and environmental effects of smelters in the Hunter Valley, one of the prime wine-growing areas in NSW.

It included representatives of local government, trade unions, and rural and environmental interests in the region.

The total fluoride emitted from a smelter should be tested by company staff, subject to checks by a State agency, and these tests must be complemented with those done outside the plant by independent people. The company should bear the cost.

The working party also recommended that standards for emissions should combine the most stringent U.S. standards.

A monitoring programme of dairy cattle was essential and should include regular tests on the animals' total food intake, tooth examinations and bone samples.

Extension services should be made available immediately to tell farmers that fluoride often occurred in food supplements and town water supplies.

Tall stacks should not be used to disperse fluoride emissions from a smelter. As much as possible should fall on the buffer zone around the plant.

CSO: 5000

## BRIEFS

**2,4,5-T STUDY**--The State Government will finance a study of the medical records of 150 Victorian workers in an effort to discover whether there are links between the herbicide 2,4,5-T and cancer. The workers will be broken down into two groups--one of 50 consisting of people who have been exposed to the herbicide and have suffered cancer and a control group of people who have not been exposed. The control group will be broken into two sections--those without cancer and those with it. The people in the two groups will be matched in sex, age and place of residence. The Health Minister, Mr Borthwick, said yesterday the study would follow closely Swedish research which linked 2,4,5-T with cancer. "This Victorian study will further refine the Swedish research methods and aims to confirm or deny the results of that work and its relevance to the Victorian situation," Mr Borthwick said. "Strict scientific procedures and controls will be established to ensure the study's findings are valid and definitive." [By Philip Chubb] [Excerpts] [Melbourne THE AGE in English 11 Apr 81 p 5]

**SALT DAMAGE STUDY**--The ALP will investigate salt encroachment on agricultural land in WA with the aim of developing a comprehensive policy. It is planning an inquiry on two fronts--by a party committee and a parliamentary select committee. Labor's rural and regional affairs committee will do a major study and will meet experts from the Department of Agriculture, the CSIRO, the University of WA, local government and Wissalts, a private organisation that promotes methods of combating salt encroachment. The committee convener, Mr J. M. Brown (South-East), said yesterday that salt encroachment on farm land was a national problem. [Text] [Perth THE WEST AUSTRALIAN in English 13 Apr 81 p 53]

**COMPENSATION FOR MINING**--The National Party central council has approved proposed amendments to the Queensland Mining Act, to ensure graziers receive adequate compensation for land required for mining. Details of the proposed amendments were released at Banana in Central Queensland yesterday by Mr Harper (NP, Auburn) during a Cattlemen's Union meeting. Mr Harper said the amendments would be introduced by the National Party, and could become law this year. They provide for compensation to include a "social disturbance" factor, market fluctuations and inflation between the date of application for a mining lease and the date of settlement, and the right of appeal from the Mining Warden's Court. Mr Harper said the National Party would also move for legislation ensuring compensation for perpetual leasehold land was paid on the same basis as compensation for freehold land. The Cattlemen's Union executive director, Mr R. Farley, said last night cattlemen welcomed the proposal. The issue of landholders' rights in the face of rapidly-expanding mining in Central Queensland had become extremely volatile--leading to five public meetings in the last six months. Cattlemen could not oppose the increasing mining encroachment onto grazing lands expected in the next 10 years, but were anxious to ensure that producers were compensated. [Text] [Brisbane THE COURIER-MAIL in English 31 Mar 81 p 3]

STATE COUNCIL CALLS FOR SUCCESS IN ENVIRONMENTAL PROTECTION

Beijing BEIJING RIBAO in Chinese 15 Mar 81 p 1

[Article by RENMIN RIBAO commentator]

[Text] In a recent document on how to strengthen environmental protection during the readjustment of our national economy, the State Council has designated Beijing as a key city for environmental protection and asks us "to make our environment protection work stay ahead of the whole country." This so encourages the people of the capital that no doubt the entire city will be set in motion to pursue more thoroughly environmental protection work.

The environment and natural resources are the two basic conditions of the people's livelihood and the material sources for achieving production and economic prosperity. To protect the environment of Beijing, the political and cultural center of the country and the hub of international contacts, is especially meaningful.

Guided by the four principles on the construction of the capital issued by the Secretariat of the Central Committee, the various departments of the municipality have stepped up their measures of environmental control and treatment of the sources of pollution. Last year the river pollution control program was extended to cover 15 different items earmarked for completion by both the state and the city. As a result, the discharge of phenol, cyanate, mercury, chromium and arsenic has been cut below the 1979 level. The improvement of the water quality of the Chang Jiang and Huan Ho has reduced the area of groundwater pollution by phenol and cyanate in the western suburbs. The renovation last year of about 1,000 furnaces has cut back both coal consumption and atmospheric pollution. In spite of these achievements in protecting the Beijing environment, the development of industry and municipal construction still continue to increase the amount of pollutants. The environment has become so polluted that we have to work even harder to bring it under control.

In its decision on environmental protection, the State Council stipulated in no uncertain terms that we must "achieve noticeable improvement of the environment of Beijing in 3 to 5 years." This gigantic task calls for active participation by the cadres and masses of the whole city.

Today, some comrades still do not realize fully the importance of environmental protection. The work to protect the environment could not be successfully pursued unless this problem is resolved.

Some comrades believe "as long as production goes up, it doesn't matter whether the environment is protected." Influenced by this erroneous concept, one-third of the 1980 construction projects for the city have brought into being new sources of pollution. Some enterprises simply do not use the environmental protection facilities they have installed while the leadership of other enterprises do not study the instructions issued by the higher authorities, nor do they try hard enough to tackle the problem of environmental protection. Inasmuch as the basic objective of the socialist enterprises is to serve the people, an enterprise which produces and pollutes the environment at the same time actually runs counter to this basic objective.

We hope the cadres, staff and workers of every enterprise will set in motion a moral drive to earn "the honor of protecting the environment of the capital" so as to make it a beautiful, clean and first rate modern city on the one hand and protect the health of its people on the other.

"We have no money to control it," is another ideological stumbling block. It is true pollution control costs money and the state now faces a financial squeeze during the economic readjustment. The real question is what can we do about it? Shall we take a positive approach by working harder and spending less or wait passively under the pretext of lack of funds? The former approach has helped those units committed to environmental protection to achieve remarkable records. For instance, the Capital Steel has already redeemed within 4 years what it had invested in installing steam and water recycling facilities for its blast furnace. The heads of some enterprises who follow the passive approach are concerned not so much with the benefit and social economic gains of reducing pollutant discharge as with the cost of pollution control installations. We hope they will try to understand the relationship between production and environment and be aware of the need to succeed in the work of environmental protection.

Another critical problem is that environmental control has not become an integral part of our industrial management. Many enterprises do not have a well-defined environmental control system and well-trained service personnel. The lack of a system of responsibilities leaves unlawful discharge of pollutants unpunished. Their equipment fallen in disrepair has led to serious seepage, overflowing, dripping and leaking. As far as we can ascertain, one-third to one-half of the industrial pollution in the city is due to poor management. Facts prove that better management which does not require costly investment has worked effectively to cut down pollution. The first step in carrying out the instructions of the State Council is to do well within the current year the environmental protection work and strengthen industrial management to achieve pollution control. The main objectives for this year are to eliminate black smoke from furnaces, to reduce menacing industrial pollution and traffic noise, to achieve tighter control of the pollution of the sources of water, to enact better environmental protection laws, to speed up the enactment and enforcement of regulations related to environmental protection, and to collect fees for excessive discharge of pollutants in order to enhance environmental protection work. The key to effective industrial readjustment and the treatment of existing pollution by the enterprises is to control pollution in the city by the "three wastes" and noise. The Capital Steel and the Beijing Chemical must reach some substantial results in their pollution control during the current year.

Environmental protection, an obligation to the people, stands for their basic interests. The current discussion by the people of the whole city on the question of "serving and being responsible to the people" should move the various enterprises and departments to further rectify their thinking and see the importance of placing environmental protection on the agenda of the party committees and incorporating it in the - planning and business management. To achieve a breakthrough in the environmental protection of the city, it is necessary to blend together production and environmental protection, place equal emphasis on the treatment of the "three wastes" and energy conservation on the one hand and the exploitation of hidden potentials, reorganization and reform on the other. Educational propaganda and economic sanctions should also work together.

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CSO: 5000/4055



ENVIRONMENTAL PROTECTION WORK DESCRIBED AS IMPORTANT TASK

Beijing GONGREN RIBAO in Chinese 17 Mar 81 p 1

[Article by staff commentator: "Solidly Grasping Environmental Protection Work"]

[Text] The current popularly developing civilized polite activities encompassing the "five stresses" and the "four beauties" is a practical step in our spirited socialist cultural construction. The "environmental beauty" of the "four beauties" requires that each individual, family, worksite, and public place be clean, sanitary, and made green by the planting of flowers and trees. For this reason, the control of pollution by any and all means and solidly carrying out environmental protection work is imperative and extremely important. This newspaper has published many reports which provide us with several revelations.

At present, the primary causes of our environmental pollution are the "three wastes" of industry. There are a number of enterprises which have achieved results following several years of control. However, the general growing tendency of pollution has not really come to a controlled halt; destruction and pollution of the natural environment is still extremely serious. Some comrades often admit that "production responsibilities must be completed, environmental protection work is not essential" and for this reason do not place environmental protection work on the agenda of leaders. This admission and practice is very damaging.

Our enterprises are socialist enterprises. To a great extent, the goals of production are to satisfy the daily increasing material and cultural needs of the people. The enterprise must not only fulfill production but at the same time must guarantee that the environment not be polluted and provide an excellent production and living environment for the people. There must be both a production viewpoint and an ecological viewpoint, stress on economic results and stress on environmental results.

Factory enterprises must place strong emphasis on environmental control work. From the experiences of many units implementing environmental protection work it can be seen that it is necessary to give play to the enthusiasm and creativity of the vast staff and workers to establish and perfect punishment and reward systems for pollution prevention. The aspect of environmental protection must be brought into the enterprises' planning, financial, and production management. The responsible departments must strengthen the examination of environmental work by the enterprise as they would the examination of production work. At the same time the enterprise is reporting the status of completion of production responsibilities, it should also report the status of completion of environmental pollution prevention plans.

At present, our nation is in a period of national economic adjustment. The weak links of environmental protection work must be further strengthened and national environmental protection must be earnestly implemented. In accord with the principle of "he who pollutes, controls", the enterprise and its control departments must solidly accept responsibility for pollution control. This is a strict social obligation. This also requires that in enterprise consolidation and conservation-based technology reforms, the elimination of pollution and improvement of the environment be an important objective.

Environmental pollution expends both natural resources and energy resources at the same time. For this reason, in the technology reform of enterprises, earnest insistence on the comprehensive application of an important policy of energy and resource conservation and environmental protection is extremely necessary. A nationally adopted reward policy for comprehensive utilization of "three wastes" products must be implemented in accordance with relevant regulations. The enterprise and its control departments also must earnestly grasp comprehensive utilization as an important task.

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CSO: 5000/4054

## ENVIRONMENTAL CHEMISTRY FIELD SURVEYED

Beijing HUANJING KEXUE [ENVIRONMENTAL SCIENCE] in Chinese Vol 2 No 1, 28 Feb 81  
pp 62-65

[Article by Liu Jingyi [0491 7234 1355], Institute of Environmental Science, Chinese Academy of Sciences; text of speech delivered in December 1979 to Chinese Academy of Sciences Environmental Chemistry Conference in Kunming: "On Environmental Chemistry"]

[Text] As a result of environmental pollution caused by human production activity, the new integrated scientific discipline of environmental science gradually developed during the 1970's.

Environmental science, the study of the quality of the human environment and its protection and improvement, has developed rapidly in the last decade or two. Environmental science has developed as the result of the interpenetration of several scientific disciplines, and its rise and development have in turn stimulated the development of the relevant sciences.

### 1. Tasks and Content of Environmental Chemistry

Environmental chemistry is an important branch of environmental science. There is as yet insufficient agreement in this country and abroad as to its definition and scope, but some generalizations are possible. Broadly speaking, it studies chemical phenomena which take place in such natural environments as the atmosphere, water bodies, the soil and the like. But the environmental questions which currently are attracting the broadest attention involve environmental pollution resulting from human production activity, and accordingly environmental chemistry generally deals with the laws governing the chemical changes of chemical pollutants in the natural environment.

When the environment becomes polluted, environmental scientists' first task is to find out what pollutants have entered the environment, in what state and form, how they are distributed, migrate and change, what effects the pollutants and the degree of pollution have on the environment, and how they can be effectively eliminated or controlled. To solve these problems it is necessary to pursue basic research in environmental science and to carry out integrated research with many other branches of science. Environmental chemistry is an important aspect of environmental science research which applies chemistry to the analysis and determination of pollutants, investigates the chemistry, chemical engineering principles



and chemical processes involved in control of environmental pollutants, and studies the laws of movement of chemical pollutants in the environment. At the molecular and atomic levels, it uses physico-chemical and other methods to study the origins and distribution of chemical pollutants in the environment, and their conversion mechanisms, state changes and ultimate fate, thus studying chemical phenomena and the chemical behavior of chemical pollutants in the environment at the microscopic level. Accordingly environmental chemistry can be summarized as the science which studies the chemical activity of environmental pollutants in the natural environment and the chemical methods of protecting against them; it includes primarily the fields of environmental pollutant chemistry, environmental analytical chemistry and the technology and chemical foundations of chemical protection against environmental pollutants.

#### A. Environmental Pollutant Chemistry

Environmental pollutant chemistry is a major part of environmental chemistry. It primarily studies the laws governing the chemical changes of pollutants in the environment, including their chemical behavior, reaction mechanisms, chemical history and ultimate fate in migration and conversion processes.

The migration and cycling of chemical pollutants in the atmosphere, water bodies and the soil is accompanied by a series of physical and chemical changes. To increase understanding of the dynamic processes in which pollutants participate in the environment, current important topics in environmental pollutant chemistry include investigation of their chemical reaction mechanisms, the forms, states and structures of pollutants and changes in their physico-chemical nature. Only by combining the microscopic and macroscopic outlooks in research is it possible to obtain a relatively precise understanding of pollution mechanisms and as a result to provide correct chemical data for their elimination and control.

Environmental factors which affect pollutant changes are extremely complex. Fairly systematic pollutant chemistry studies have been conducted abroad dealing with certain important atmospheric, water and soil pollutants.

1. Environmental pollutant chemistry aims at investigating processes of pollutant migration and chemical change in the atmosphere and their end results, at pollutant control and at providing environmental quality prediction data for city planning and for optimal industrial siting.

Profound investigations of the process of formation of photochemical smog have been conducted abroad, focusing on chemical processes involved in the formation of aerosols which are extremely harmful to human health during the transport of atmospheric pollutants, and on analysis and diagnosis of particulate matter. Certain countries, including the United States, have placed great stress on investigating sulfate aerosols produced by coal combustion.

2. Water pollutant chemistry investigates the solvent equilibrium chemistry of water systems, and has already moved from single components to the study of multi-phase multireaction combined equilibria. In order to get closer to the real environmental system, the dynamics of reaction processes in nonequilibrium systems has also been investigated, as have various types of chemical state dynamics. An attempt has been made to clarify the overall pollutant cycle in water, the atmosphere and the soil, the cycling process in the ecological system, and the global cycling system.

Research abroad has devoted considerable attention to chemical aspects of the entry of such harmful substances as heavy metals and agricultural pesticides into water, and rather thorough studies have been made in particular of the entry of pollutants into the bottom layers of water bodies, including such processes as absorption, flocculation, accumulation and chemical conversion of pollutants at the water-bottom layer boundary. This has an important effect on pollutant purification, on the degradation of pollutants in water and on their transport in water, and the investigation has provided scientific data for the control and alleviation of heavy metal and agricultural pesticide pollutant of water.

Investigation of the accumulation and degradation of agricultural pesticides in the environment and on the effect of agricultural pesticides and their metabolic processes on the ecological balance and human health will furnish quantitative information on their dynamics in the environment and provide a basis for safety evaluations, and accordingly should receive considerable attention.

Organic pollutants in environmental waters can easily be broken down by microorganisms, and accordingly investigation of their chemical degradation under the influence of microorganisms can be called an important component of organic pollutant chemistry. Research in this area will require close coordination with environmental biology and environmental medicine.

3. Soil pollutant chemistry and pollutant environmental chemistry. Owing to the colloidal nature of soil, its mineral makeup and the action of microorganisms, the degradation and conversion of pollutants in the soil have their own special characteristics which provide data for soil environmental quality evaluation and pollutant protection. Investigation of the chemical histories of pollutants on land and in the aquatic ecosystem, and especially of their chemical transformations and ultimate destinies, will provide data on the harmfulness of certain pollutants in the ecosystem and on ways of protecting against them. Research in this area must be pursued in close coordination with environmental biology and ecology.

4. Chemical modeling and simulation. In recent years, chemical modeling and simulation have developed rapidly abroad with the result that complex environmental problems and large numbers of experiments can be treated abstractly and simplified, thus offering data for pollutant treatment, environmental quantity evaluation and environmental planning. Foreign chemical simulation of photochemical fog, modeling of the chemical equilibria of heavy metals and agricultural pesticides at the water-bottom layer boundary of water bodies and the use of computer simulations have already been pursued to a considerable degree. In addition, simulation experiments and model calculations for certain lakes and streams and microecosystems have been made.

In the last decade or two, research has been done abroad on chemical pollutants in oceans, bays and harbors, including the distribution, conditions for existence and transport laws of agricultural pesticides, heavy metals, petroleum and radioactive nuclides. This will provide information for marine environmental quality evaluations and prediction of ocean pollution and self-purification capabilities. Work in these areas by environmental chemists must be pursued in coordination with oceanographers.

## B. Chemical Techniques for Protection Against Environmental Pollutants and Investigation of Their Chemical Foundations

Judging by the development of protection against environmental pollutants abroad, in most cases existing industrial technology has first been applied to individual cases of industrial waste management, with new technologies gradually being developed, after which closed-cycle processes, non-harmful processes, non-harmful energy sources, rational utilization of resources and thorough use of environmental self-purification capabilities have been investigated. In recent years, the development abroad has been from treatment of individual cases of environmental pollution to territorial management and the investigation of comprehensive pollution protection for a given water system or geographical area. Many simulation experiments and numerical models have been developed and systems analyses conducted in attempts to find optimal system design, control and management for the solution of environmental pollution problems. Some new processes and materials have resulted from process improvement, efforts to decrease pollutant emissions and the implementation of closed-cycle processes. This type of environmental chemistry has great potential.

Pollution produced by energy sources, particularly atmospheric pollution resulting from coal combustion, must receive special attention. Pollutant control studies in this field should be closely coordinated with energy development. Environmental chemists should participate actively in development of new processes, new materials, the removal of sulfur and nitrogen compounds from fuels, and coal liquification and gasification, and in the development of new chemical energy sources and non-harmful fuels.

The development of modern industry has produced large quantities of waste, which not only wastes large amounts of resources, but also produces grave environmental pollution and damage. Waste recycling research abroad has already achieved certain results. Starting from our past stress on "comprehensive utilization," our country should conduct chemical investigations related to resource recycling and reuse of waste in order to reap the double benefit of eliminating pollution and protecting the environment, and solving the problem of efficient utilization of resources.

## C. Environmental Analytical Chemistry

Environmental analytical chemistry constitutes the eyes and ears of environmental science and environmental protection and is an important tool in these fields. To understand the nature of environmental pollution, to eliminate or control pollutants, and to investigate pollutant transformations and pollution mechanisms, it is necessary first to investigate the analytical determination of pollutants and their manifestations. In the opinion of some, progress in environmental chemistry depends on progress in environmental analytical chemistry.

Pollutants generally enter the environment in complex multicomponent systems, in low concentrations, and with numerous interfering factors, and accordingly analytical methods must have high sensitivity and precision, specificity and selectivity. The effects of pollutants in the environment on human health and on living things generally are produced by low concentrations over long periods, and accordingly it is still an important task of environmental analytical chemistry to develop new methods and new technologies for studying new pollutants and for elemental analysis.



In order to study pollutant migration in the environment and pollutant effects, pollutant morphological (state) analysis and system analysis have been developed rapidly in environmental analytical chemistry abroad. The former of these fields involves analysis and determination of pollutant valence states, combination states, and binding states and structures; the latter involves systematic analysis and measurement of the different forms of a single sample according to its specific sequence of procedures so as to determine the nature and proportions of all components. Many analyses of such pollutants as mercury, arsenic and DDT have made it clear that the toxicity and degree of harmfulness of pollutants are related not only to the quantities present but also to their physico-chemical states, forms, valence and structure.

Much research has been done abroad with regard to environmental pollution characterization, including sampling methods, sample storage, prevention of vessel contamination, signal transmission and statistical processing of data. Analytical methods and standardization and automation of sampling and of instruments and equipment have become relatively mature.

Environmental chemists have paid considerable attention to investigating the relationship between the composition, structure and state of pollutants and their toxicity. Many environmental pollutants, particularly organic pollutants, have toxic, teratogenic or mutagenic properties, and these have been much studied abroad; for example the investigations of the relationship between the structure and toxicity of such carcinogens as polycyclic aromatic hydrocarbons and nitrosamines, and chemical investigations of antagonistic or synergistic effects between environmental pollutants are worth pursuing. This research must be conducted in close coordination with environmental biology and environmental medicine, and modern chemical theories must be used for qualitative and quantitative explanation of the effects of pollutants on living things so as to provide data for protection against them.

## II. Environmental Chemistry in This Country and Its Prospects

Since 1972, many organizations have pursued research in environmental chemistry in accordance with our country's environmental protection needs, related to water resource protection and urban environmental quality evaluation, with a focus on management of pollution sources. Particularly in the last few years, in order to deal with some typical water and urban environment pollution problems, investigations have been made of water pollution chemistry of mercury, cadmium, zinc, lead and other heavy metals, the ecological chemistry of agricultural pesticides and the degradation and transformation of synthetic agricultural chemicals, phenols, cyanides and the like in the soil, the effect of pollutants on the quality of the subsurface water of northern cities, and the characteristics of atmospheric dust, nitrogen oxides reactions and the formation of photochemical smog; these investigations have achieved varying degrees of progress. In keeping with the needs of protection against pollutants, applied and basic research has been done in catalysts, polymer films, flocculation, precipitation, absorption, ion exchange, solvent extraction and other physico-chemical treatment techniques, and the chemical treatment of polluted water bodies has been investigated. In addition, methods for analytical determination of various inorganic and organic pollutants have been created and some special or general analytical equipment has been developed, some results have been obtained in standardization of pollutant analytical methods, and some work has been done in pollutant state and structure analysis.

In order to identify the reasons for damage to large areas of wheat, the laws governing oxidation of chloral to trichloroacetic acid under the influence of micro-organisms were found, leading to identification of chloral as the culprit and to the proposal of suitable degradation measures. In pollutant control, many investigations of control processes have been conducted, such as the use of iodine-containing activated charcoal to treat low-concentration SO<sub>2</sub>-containing waste gas tailings, the use of a bimetallic catalyst in catalytic reduction treatment of DDT-containing wastewaters, and the use of the chromium mist suppressor P-53 in the electroplating industry to suppress chromium mist pollution, all of which are at an advanced level for this country. In investigation of the relationship between the structure and carcinogenic activity of such compounds as polycyclic aromatic hydrocarbons and nitrosamines, a "two-region theory" quantitative formula was proposed in relation to cancer-causing activity of polycyclic aromatics, which gives 98 percent agreement with observations. Initially atmospheric pollution chemistry was nonexistent in our country, but in recent years research work has been begun, and initial investigations have shown that photochemical smog exists in certain petrochemical industry areas of our country and that the conditions for its formation should be thoroughly studied.

Research in environmental chemistry in this country has already achieved a certain breadth and depth, and for the most part it deals both with the solution of certain specific environmental problems and with increasingly profound studies of the chemical behavior of specific pollutants, embodying a rather good combination of theory and practice. However, environmental chemistry as a whole is still in its initial stage. Many urgent problems still await further investigation.

The development of environmental chemistry must be related to this country's current pressing and serious environmental questions, and must conscientiously absorb foreign experience while focusing on the development of Chinese-style environmental chemistry in keeping with our country's environmental pollution situation and the development of its environmental work. By conscientiously digesting the results of environmental chemistry work in this country and abroad, thoroughly bringing into play the characteristics of each field and each organization, successfully implementing large-scale cooperation between scientific disciplines, and by progressing on the basis of an extensive and profound investigation of actual circumstances, we will continue to make new contributions to the development of this country's environmental protection work and environmental science and to the four modernizations construction.

9480

CSO: 5000/4057

RIVERSIDE INDUSTRIES WORK TO ELIMINATE POLLUTION

Beijing BEIJING RIBAO in Chinese 15 Mar 81 p 1

[Text] Working with the riverside industrial and mining enterprises, the Tonghui River System Protection Group has been treating the sources of pollution along the river. Last year, they finished 36 clean-up projects and as of today, 80 percent of the sources of pollution have been brought under control.

The Tonghui River drains the eastern suburbs of the city. Dotted with 79 factories and 145 sources of serious pollution along its shores, it is the most polluted river of the municipality. Anxious to clean the Tonghui River, the leadership of the riverside enterprises have formed environmental protection organs to improve their pollution control technology. The manager of the Second Pharmaceuticals Plant of Beijing who is personally in charge of its environmental protection has assigned experienced engineers to eliminate the sources of pollution. Last year they completed 19 pollution control and comprehensive utilization projects and recycled, 7,620 tons of discharged matters worth 1.01 million yuan. The Second Printing and Dying Plant of Beijing which uses 15-20 tons of potassium chromate every year launched a drive last year to recruit capable people to tackle the problem of heavy potassium chromate. After 6 months of arduous efforts, they have succeeded in ridding the Tonghui River of this toxic matter. Having ascertained the sources of pollution, the Beijing Chemical Plant has drawn up a program "to clean the atmosphere in 3 years and the river in 5 years." a year ago it completed 36 projects for controlling and utilizing the 3 wastes, and recycled 588 tons of discharged wastes worth 689,000 yuan. The Beijing Chemical Testing Plant which has succeeded in eliminating its arsenic pollutants by replacing the arsenic-alkali method with the vulcanization method for desulfurization is able to cut down its annual discharge of arsonide by 35 tons.

5360

CSO: 5000/4055

BEIJING MAKES HEADWAY IN REDUCTION OF SMOKE, DUST

Beijing BEIJING RIBAO in Chinese 15 Mar 81 p 1

[Article by Liu Shouchang 0491 1108 2490]

[Text] The environmental protection bureau, the coal conservation federation and the labor office of the municipality which have worked together since last year to improve over 970 low heat-efficient furnaces and over 40 industrial furnaces and kilns have saved 30 thousand tons of coal, eliminated 900 tons of sulfur dioxide discharge and reduced atmospheric pollution by toxic gases of the capital's airspace. According to investigations conducted by the municipal Environmental Protection Bureau and other related organs, a year ago there were nearly 1,000 coal-guzzling, poor heat-efficient and dust-producing furnaces along 40 major streets of the city, a principal source of atmospheric pollution. They proceeded to work out a program calling for "safe operations to safeguard production, conserve heat and eliminate smoke and dust." Over 80 percent of the furnaces have been improved by the workers and technicians who were organized to work on the elimination of smoke and dust. The furnaces under the jurisdiction of the Erlonglu street organization have installed smoke and dust elimination devices. The key to the reduction of smoke and dust is to increase heat-efficiency and conserve coal. But this in turn depends on the technical skill of the furnace operatives. According to incomplete tabulations, the 24 training classes run by the city last year for furnace operatives of various categories had trained over 2,760 furnace hands, and emulation drives have spotted many dust elimination and coal conservation champions.

Besides, the installation of central heat in the city has done away with many chimneys and furnaces. Since many colleges and office buildings do not have central heat, a single compound usually has tens of heating furnaces. They waste manpower and fuel and aggravate pollution. The merger of boilerrooms for central heating has eliminated over two-thirds of the boilerrooms and thus stopped a large number of chimneys from emitting smoke.

In spite of what has been done in recent years to eliminate smoke and dust, coal consumption in the city is still increasing. This is brought about by the development of production, population growth and inadequate supply of liquid and gaseous fuel. The growing number of motor vehicles in the city also contributes to the discharge of more toxic gases. Consequently, atmospheric pollution in the city is still very serious.

REDUCTION OF SMOKE, DUST POLLUTION IN FUSHUN REPORTED

Beijing GONGREN RIBAO in Chinese 17 Mar 81 p 1

[Article by Wang Ziqiang [3769 1311 1730]

[Text] The City of Fushun in Liaoning Province, with increased guidance, complete planning, and comprehensive control of dust and smoke pollution, has obtained gratifying environmental and economic results.

Fushun is a city of heavy industry with serious smoke and dust pollution. In order to implement control and planning, the concerned leaders of Fushun took a personal hand in the vast project. All of the various units, in a spirit of total cooperation, also actively sought to control smoke and dust pollution. The Fushun Aluminum Plant, in the process of production, discharges large quantities of hydrogen flouride and chlorine, creating the number one cause of air pollution in Fushun. This plant, in accord once with city planning, made great efforts to promote control projects on the basis of three deadlines, and it completed the projects on time.

After 2 years of effort, Fushun's comprehensive control of smoke and dust pollution has achieved notable results. According to incomplete statistics, by the end of 1980, central heating had been developed in 37 quarters of the city's residential areas, with a central heat supply heating over 2.2 million square meters. Of all residences in the city, 62.5 percent are now using coal gas, liquefied gas, or coking gas. More than 1,000 furnaces in the city which discharge smoke were reconstructed reducing the dust. The vast air pollution was brought under control and even began to show a tendency to decrease.

At this same time, use was also made of reclaimed cement and carbon black, surplus industrial heat, and combustible tail gas, thus conserving electricity, petroleum, and coal for a yearly national savings of more than 9.8 million yuan.

9795

CSO: 5000/4054



## DESERTIFICATION CONTROLS PROPOSED

04120122 Beijing XINHUA in English 0106 GMT 12 May 81

(Text) Beijing, 12 May (XINHUA)--Proposals for prompt action to control sand encroachment, made by a group of Chinese scientists after a one-year investigation, have been approved by the State Agricultural Commission.

The investigation group composed of 40 experts led by Professor Zhu Zhenda, director of the Lanzhou Desert Research Institute under the Chinese Academy of Sciences, conducted the survey in 12 provinces and autonomous regions in northwest, north and northeast China. They stressed that the only way to control desert encroachment is to rationally utilize local natural resources.

The survey shows that in these northern parts of China, 170,000 square kilometers of land have been invaded by sand and classified as desertification areas. Another 170,000 square kilometers have been classified as areas facing the danger of desertification. Of the desertification areas invaded by shifting sand, about 120,000 square kilometers are of long-standing origin. The rest have deteriorated in the past half century mainly due to overreclamation of land, overgrazing and uncontrolled tree felling.

In their report to the State Agricultural Commission, the scientists put forward proposals for changing the pattern of land use in semi-arid and desert grasslands. They propose limiting the cultivation of dry crops and cordoning off deserted farmlands and degenerating grasslands for protection and natural regeneration. Trees will be planted between sand dunes and drought-resistant shrubs will be grown on the dunes to prevent the movement of the sand. Criss-crossing networks of tree belts and small groves of trees will be planted and forage farms set up to protect existing farmland and restore ecological balance. The report suggests that less stock be pastured on natural grasslands and new pasturelands be cultivated. Scientific methods of grazing will be adopted.

A decision was made at a meeting held in March this year in Jining, Inner Mongolia, to set up experimental protection and control areas in two autonomous counties in Inner Mongolia and one county in the Ningxia Hui Autonomous Region. The State Agricultural Commission plans to hold courses this autumn to train officials in charge of sand control work and spread experience in checking desert encroachment.

The survey of the desertification areas is part of a current nation-wide survey covering farmlands, grasslands, forests, deserts, rivers and lakes and existing conditions of agriculture, livestock raising and fisheries. Based on the data collected, plans will be mapped out for the rational use of the resources and for the future modernization of agriculture.

CS0: 5000

## MEASURES TAKEN TO HALT DEFORESTATION DISCUSSED

San Jose LA REPUBLICA in Spanish 31 Mar 81 p 28

[Text] Since the establishment of the General Forest Directorate approximately 12 years ago, deforestation has declined considerably in this country, according to Eng Luis Fernando Gonzalez, chief of the directorate's Department of Forest Management and Development.

Although the destruction of forests and felling of trees has not stopped, it has declined considerably thanks to the control measures adopted by the directorate.

The campaign against deforestation was stepped up about a decade ago, of course, but the practice dates back to the time that the land was first settled.

However, it is since mankind has had access to the products of technology that the problem has become so extreme that scientists worldwide have said that if drastic measures were not taken, the planet would become a huge desert in 50 to 100 years.

In Costa Rica, the substitution of modern power saws for axes and powerful trucks and tractors for oxen has greatly accelerated the process of forest-pasture substitution, especially since 1960.

Prior to that time, Eng Luis Fernando Gonzalez said, the deforestation suffered by the central region and Pacific Saco was considerable and was affected by the opening of communication routes that were in constant use throughout the year.

Regions with a high forest potential were subsequently settled, producing effects similar to those of the Atlantic, southern Pacific and northern regions.

According to Gonzalez, with the establishment of the General Forest Directorate in 1979 it cannot be said that deforestation of the country has stopped, but there has been a gradual reduction of the area deforested annually.

The rate of deforestation, which had been as much as 60,000 hectares annually, has changed since 1973, when control of deforestation by officials of the General Forest Directorate first began to be felt.

Contributing to this reduction are the control measures adopted, such as establishment of forest districts assigned to regional agricultural centers and the current timber control program being implemented by means of control stations.

Gonzalez stated that this has raised awareness in the country to such a degree that it is almost certain that no citizen can claim that he is unaware of the obligation for obtaining a permit or authorization to cut down trees for various purposes.

These permits are granted in the case of land classified for agricultural use. Thus in 1979, 33,345 hectares were approved for deforestation for agricultural purposes and 599 permits were granted, a figure similar to the one for 1980. The average number of hectares approved for deforestation between 1975 and 1979 was 24,674, which is far less than the 60,000 hectares deforested prior to 1973.

This data demonstrates the effectiveness of the control measures taken. In 1979 alone, a total of 1,757 inspections were made of farms requesting permits to utilize timber; however, permits were denied in 38 percent of the cases.

The fact that a permit is granted for utilizing timber does not always mean total felling of the forest, since many permits are for selective exploitation involving the felling of trees on additional pasture lands, cacao plantations and land on which other crops are grown.

The timber control program underway is being implemented by means of various control stations established at Perez Zeledon, Canas, San Miguel de Sarapiquí, Sucre, Terron Colorado de San Carlos and Siquirres. The amount of timber used in sawmills and other forest industries is also controlled.

Gonzalez said that it must be remembered that the deforestation resulting from the permits granted by the General Forest Directorate does not mean a deterioration of the environment. The serious problem of deforestation is represented by the invasion and occupation of land located within national reservations and other holdings, opening roads and highways, hanging electric power lines, permits being granted by other institutions and fires and felling in violation of the Forest Law.

Finally, mankind must learn to take from nature what it needs without destroying nature and without depriving it of its essentials. In this job of returning to nature what has been taken from it, a very important role is played by the Ministry of Agriculture, which currently has 3 million trees available for reforestation.

11915

CSO: 5000/2108

IRENA DIRECTOR COMMENTS ON FOREST, LAKE CONSERVATION

Managua BARRICADA in Spanish 16 March 81 p 7

[Text] The director of the Nicaraguan Institute for Natural Resources and the Environment, IRENA, Jorge Jenkins, stated during his appearance on Radio Sandino's "Direct Line" program on Friday that historically, every year 120,000 hectares of forest in our country are destroyed by uncontrolled summer fires.

"An alarming situation occurs every year in summer as a result of carelessness during the traditional burning of pasture lands to stimulate the growth of new grass to feed cattle or to prepare land for growing grain," Jenkins said.

The director of IRENA made an appeal that the burning of pasture lands be discontinued or at least that good patrols be carried out to prevent the fire from spreading to other areas. He pointed out that more than 1,000 fires are fought annually over an area of 200,000 hectares.

Need for Educational Campaign

IRENA's director also mentioned the need for a huge national educational campaign for conservation of our natural resources and the environment. He added that steps in this direction have already been taken, with the incorporation of 1,053 students in the work-study program and university participation in research being conducted by IRENA technicians.

"We have to raise national public awareness concerning the protection of natural resources and the environment," Jenkins said, adding that "the mass media and mass organizations will have to play a major role in this respect."

He mentioned the awful pollution of Lake Managua, in which industries dump pollutant chemical wastes such as mercury. According to the Department of Occupational Safety and Health under the Ministry of Labor, there are 40 tons of mercury in the lake as a result of this metal being dumped there by the multinational Pennwalt corporation.

Windbreaks

Jenkins also referred to the windbreak project being implemented within the triangle formed by Leon, Telica, Puerto Momotombo and the Izapa dam. He described it as unique in Latin America and added that its cost of \$5 million will soon be compensated by the reduction of respiratory bronchial diseases and erosion in the west.

In this connection, it should be remembered that 50 percent of the country's bronchial-pulmonary diseases occur in Leon due to dust storms, which deposited tons of dirt in the metropolitan area in 1972.

Jenkins and the deputy director of IRENA, Vladimir Perez, evasively answered the questions asked by listeners of "Direct Line" concerning the ecological impact of the Copalar hydroelectric project, the possibility of petroleum exploitation and the problems of craftsmen in obtaining lumber at favorable prices.

IRENA's director also talked about national parks, pointing out that the Masaya Volcano National Park had 200,000 visitors last year, while the Edgard Lang and Juigalpa zoological gardens recorded 100,000 visitors.

#### Pollution of Large Lake

Concerning Lake Nicaragua's pollution, he said that a project for moving the port and a study on the pollutant effect of waste from the El Diamante rice mill and nearby tanneries are being prepared in cooperation with the Ministry of Transportation.

In reply to a question by Mr Luis Alberto Castillo of San Juan del Sur concerning the alleged charging of farmers for possession of land and breeding livestock, Jorge Jenkins and Vladimir Perez explained that IRENA is not authorized to do so. "IRENA charges only for cutting timber in excess of 10 trees and for hunting permits," they said.

Finally, Jenkins made an appeal for all Nicaraguans to become aware and to become protectors of our natural resources and the environment.

11915

CSO: 5000/2108

## BRIEFS

DECREASE IN FOREST AREAS--Addis Ababa (EH)--Of the country's land surface area of 120 million hectares, 4.2 million is covered by dense forest, 80,000 million hectares by mountain and 27 million by lowland wood land. This was disclosed by Comrade Wolde-Kidan Nirie, head of State Forest Department of the Forestry and Wildlife Conservation and Development Authority in an interview with newsmen here. Comrade Wolde-Kidan said that the total area covered by dense forest at the beginning of the 1970's, was 8.7 million hectare and this has now been reduced to 4.2 million hectares, which is an alarming reduction of about 50 per cent. A series of agitational campaigns through educational films and briefings have been waged throughout the country to make the public aware of the advantage that can be acquired from forest resources in the promotion of the national economy, Comrade Wolde-Kidan further noted. He added that in Addis Ababa alone some 11 tree seedling centres have been set up and technical and material assistance is being provided by the Authority. [Excerpts] [Addis Ababa THE ETHIOPIAN HERALD in English 14 Apr 81 p 3]

CSO: 5000/5011



DANGERS OF DDT DISCUSSED

High Levels Cited

Salisbury THE HERALD in English 30 Apr 81 p 8

[Editorial: "Self-Destruction"]

[Text]

**TODAY** we publish a rather unusually long letter from Mr Thomson on the dangers of DDT. Mr Thomson's crusade in trying to bring an awareness of the dangers of chemicals we use, while the rest of Europe and the United States have long banned them, deserves our support.

We do not, of course, advocate the indiscriminate banning of all pesticides which could mean disaster for our agricultural industry. But, on the other hand, we would not condone self-destruction.

It may be true that DDT has played a vital role in the control of mosquitoes and other harmful insects, but reliance on chemicals for pest control has some great disadvantages. Among these are the danger of pest resurgence; the hazard of non-target species such as wild-life and pollinators; the residues and drift of chemicals on food crops; open water bodies and pastures and product contamination; pollution and resistance.

Studies done in this country have shown that the level of DDT in human bodies recovered at post-mortem examinations has been five and 25 times greater than in Western Europe.

Proponents of DDT would surely not deny the physiological effects of DDT which are chiefly on the nervous system. We understand it causes apprehension, excitement, tremors and convulsions, and in addition, cardiac arrhythmias and changes in liver tissue.

The answer lies in biological control.

Salisbury THE HERALD in English 30 Apr 81 p 8

[Text]

SIR — A reply is necessary to the series of articles on the controversial matter of DDT usage in this country after my address to the National Affairs Association on April 10.

The initial report on my talk was essentially correct but failed to specify that I also mentioned other persistent pesticides such as toxaphene and dieldrin which are part of the same group as DDT (in which term I include its persistent metabolites). A lot of red herrings have been drawn across the trail because of this.

The matter, however, is of such national importance that I would appreciate your letting me explain my side of the story.

The question as to whether or not foodstuffs in Zimbabwe have been found to contain persistent pesticide contamination can really be quite easily resolved if my scientist critics could be persuaded to publish the results of foodstuff analyses, particularly animal products obtained in 1980.

In my talk I did not quote these figures and I have had no intention of generating embarrassment for anyone but criticism has been sufficiently scathing to leave me no option but to make this suggestion.

The facts and figures quoted in my talk were almost exclusively those from my own research (the analyses were done by the laboratories of the Department of Research and Specialist Services) or those already made public.

#### CAREFUL

The opinions I expressed were derived from a careful appreciation of my own data evaluated against extensive scientific literature from other

countries: temperate, tropical and sub-tropical; discussions held in the U.S.A. with world experts on this subject and with whom I am in constant written communication; and discussions with learned colleagues in Zimbabwe who share my concern.

Two years ago, incidentally, two world experts who examined my then limited data predicted a collapse of our raptor populations within 10 years.

My talk to the National Affairs Association covered the following points:

1. My own research work indicates that our environment is heavily contaminated with DDT to the extent that our fish eagles will be extinct within 10-15 years if we do not do something about the use of DDT immediately.

Our peregrines and lanner falcons, the black sparrowhawk and several other raptors will be gone before the fish eagle. There are indications that our herons and cormorants will also disappear.

2. One of the articles suggests that I am basing my opinions largely on the result of one fish eagle egg obtained from Victoria Falls. In fact I have the results from 33 different clutches of eggs, the bulk of which came from the southern shores of Lake Kariba.

The average level of

contamination is 60 ppm which can be loosely compared with the 30 ppm threshold at which the American bald eagle — also a fish-eating eagle — began to decline.

Other egg samples came from a wide area and in all localities severe and consistent contamination levels have been recorded.

Altogether I have the results from 168 samples which represent a substantial body of evidence.

3. This evidence points to the fact that our rivers are seriously polluted and that there is a genuine threat to our fish populations which has not yet been taken seriously by our agricultural scientists. Our fishing industry provides about 15 000 tonnes of protein per year.

#### CONTAMINATION

4. My results show that our poultry contains DDT which must be a direct result of contamination in commercially produced fowl foods.

5. Human mother's breast milk in Zimbabwe is seriously contaminated. Already published figures indicate DDT contamination at levels of between 0.1 and 1.0 mgms per litre. These levels are as high or higher than have been recorded anywhere else in the world.

6. Some doctors are beginning to admit that we have been too glib about the effects of DDT on man. It would appear that medical opinion supporting the contention that DDT has a low toxicity on man is based most exclusively on the effects on man resulting from normal environmental exposure. Little attention has apparently been given to the effects from rapid weight loss when the subject is carrying significant levels of accumulated toxin in his fat reserves, particularly in patients suffering from



serious illnesses which induce massive and uncontrollable weight losses. Zimbabwe patients have been found carrying in excess of 50 mgms of DDT per kg of fat.

### TOXIN

This means that for every 10 kg of fat such patients lose they will release directly into their blood stream half a gram of toxin. Any serious disease leading to rapid weight loss will thus cause an increase of circulating toxin which the patient will have to overcome in addition to the stress of the illness itself.

Unless pressure is maintained on those responsible for recommending the use of DDT and other persistent pesticides in Zimbabwe, no alternatives will be used and no alternatives sought. At this point in time there are several alternatives to DDT which are being successfully used on maize and cotton crops in the U.S.A. and in South Africa. So the suggestion that these alternatives need testing here is not correct.

While tsetse control is facilitated by the use of DDT which is relatively cheap there is an urgent need to re-evaluate the possible benefits of such a strategy against its effects on man and the environment.

As a conservationist, I share the deep concern of my department concerning the wild life which is currently threatened as a result of what I can prove is massive environmental contamination by DDT.

However, as an individual I am also concerned about my health and that of my family, in particular, and about the health of my fellow Zimbabweans, in general.

We have no option but to eat the food available to all of us and to become contaminated. I have to live in an environment which is being degraded by persistent pesticides perhaps used by people in ignorance or with only their personal or parochial interests in mind and

recommended by scientists and agronomists whose concerns are motivated solely by the exigencies of the narrow confines of their own disciplines and/or commercial interests.

One of my critics has described my environmental data as merely "interesting miscellaneous samples" when, in fact, they hold the key to the whole problem.

I believe I have a duty as a conservationist to make known the chronic hazards to which our environment is being exposed; as a citizen of Zimbabwe, I believe I have a duty to inform my fellow citizens of the probable dangers to their health inherent in the continued use of persistent pesticides; and I have the right to protect my personal and professional integrity in the face of unprovoked provocation and to request of my detractors that they publish the results and circumstances of the analyses I know will support my case — results which I cannot discuss under threat of legal action.

### THREATENED

If there are no such results why am I being threatened with prosecution for allegedly revealing "official secrets"?

Most of the advanced countries of the world have banned persistent pesticides. Presumably they too have scientists. Do our Zimbabwe scientists consider their action in having DDT banned in their own countries to be "hysterical" too?

Or does the fact that these countries banned persistent pesticides infer that they had good reason for doing so? The laws of economics apply in those countries too?

I do not believe my attitudes or claims to be "hysterical" since they are based on hard scientific data, sought and reasoned medical opinion and common sense.

My involvement in this topic results from a directive from my department in response to public concern and this letter is published with the approval of my director.

W. R. Thomson.

Provincial Warden,  
Mashonaland South, Department of National Parks and Wild Life Management,  
Salisbury.

## MINISTRY REPORT: COAL, PEAT HARM MORE THAN NUCLEAR POWER

Helsinki HUFVUDSTADSBLADET in Swedish 31 Mar 81 p 13

[Article: "The Ministry of Trade and Industry: Coal and Peat Power Plants More Harmful than Nuclear Plants"]

[Text] Coal and peat power plants are more harmful than nuclear power plants with regard to the effects on health and the environment. This is shown in a summary of economic factors for the production of electricity and its effect on the environment that has been made at the Department of Energy of the Ministry of Trade and Industry. The estimated mortality caused by a power plant unit of 1,000 megawatts is, per power plant year, 0.7 to 2.3 cases for coal power plants; 1.0-4.2 cases for peat power plants, and 0.2 cases for nuclear power plants.

The air that is discharged from power plants that burn coal and peat contains, apart from chemical impurities, radioactive matter. The amount of radiation that the populations is exposed to is a high or higher than the radiation emanating under normal running conditions from a nuclear power plant, according to the investigation. According to the investigation the production power costs for electricity in coal power plants and peat plants are so close to each other that it is not possible to favor either one of them bases on this factor. A 1,000 megawatt coal power plant discharges 1,150 tons of airborne ashes every year, 32,400 tons of sulphur dioxide, 18,000 tons of nitrogen dioxide, 11,000 tons of carbon dioxide, 0.2-2.1 tons of polyaromatic hydrocarbons and 8.9 tons of heavy metals. Each day such a power plant discharges 3.15 tons of airborne ashes, 88.76 tons of sulphur dioxide, 51 tons of nitrogen oxides, 17,500 tons of carbon dioxide and more than 24 kilograms of heavy metals.

Man is exposed to pollution mainly when inhaling. According to the study the air impurities cause chronic diseases of the respiratory tract, worsening of heart and lung diseases, asthma, untimely death and genetic changes.

The air impurities affect the vegetation in Finland, for example, in such a manner that the growth of coniferous trees is slowed down. Apart from that the discharge of carbon dioxide causes changes in the oxygen balance both in lakes and in the soil. This can indirectly affect both aquatic plants and animals as well as the growth of forests.

## No Urgent Need for New Power Plant

An investigation called "The Production of Electricity in Finland from 1980 to 2000" has been made by the Ministry of Trade and Industry at the National Technical Research Center. In building a 1,000 megawatt nuclear power plant domestic producers can

contribute 60.1 percent of the work, taking into account indirect imports. In building a 500 megawatt coal-powered electric plant, it is 58.5 percent. If one takes into account direct imports, the share of domestic production for a nuclear power plant is 47.1 percent, and for a coal-powered plant, 45.8 percent.

A power plant investment creates most jobs while it is under construction. Indirectly a 1,000 megawatt power plant creates employment for 13,900 to 19,000 work years and when the combined employment is included 18,200 to 22,800 work years. The employment resulting from a 500 megawatt peat plant is 3,600 work years and, with the combined employment included it is 4,200 work years.

The degree of domestic work at a 200 megawatt peat plant is 65 percent and if the direct import is included it is 51.1 percent. The direct employment is 2,500 work years and the combined employment is 2,900 work years.

According to the investigation decisions regarding new power plants are not urgent, since the current electric and production capacity covers future needs at least until the beginning of the 1990's. This means that decisions regarding the next large power plant do not need to be made before next year at the earliest.

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